Schematic Package Supplement to

Table of Contents

Kⓐⓝⓖⓐⓡⓞⓞ™

Operation, Maintenance and Service Manual

NOTE
This staple temporarily holds the schematic package together. Remove the staple before using the schematics.

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5L

Kangaroo Upright Game Wiring Diagram

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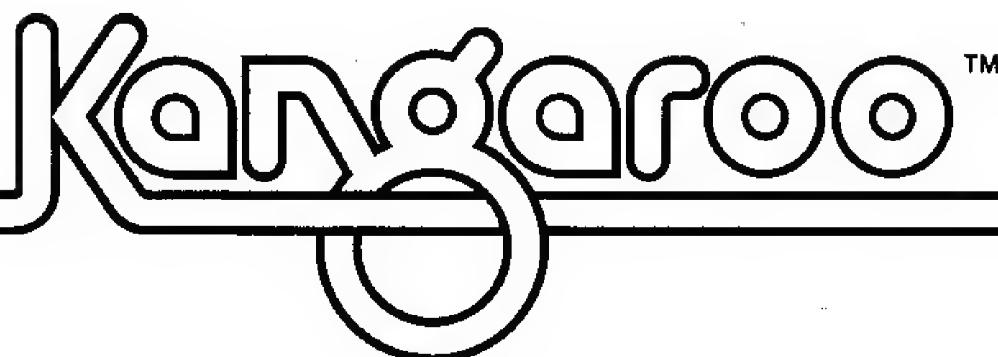
Ireland-Built
Kangaroo Game Wiring Diagram

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2nd printing
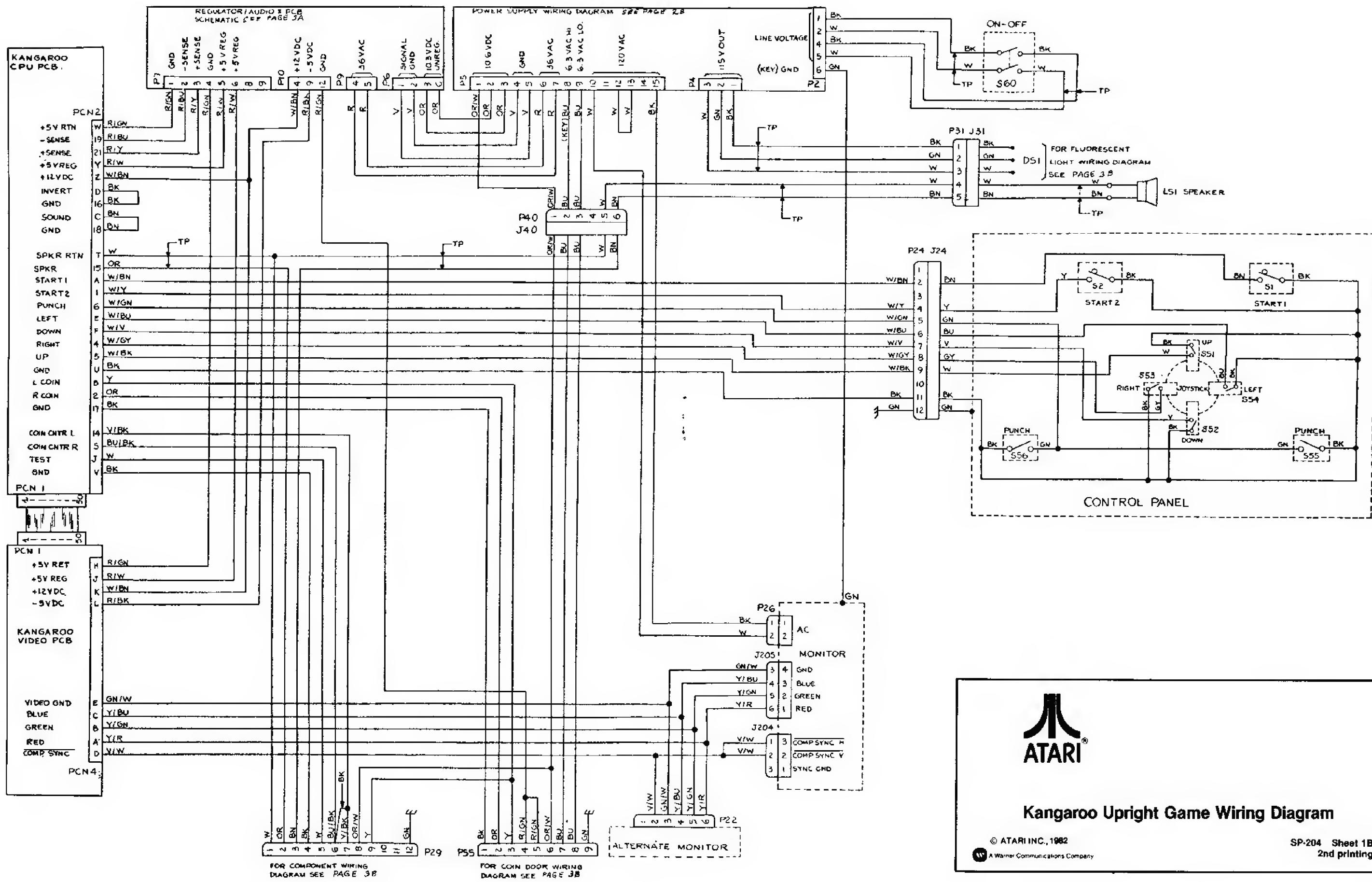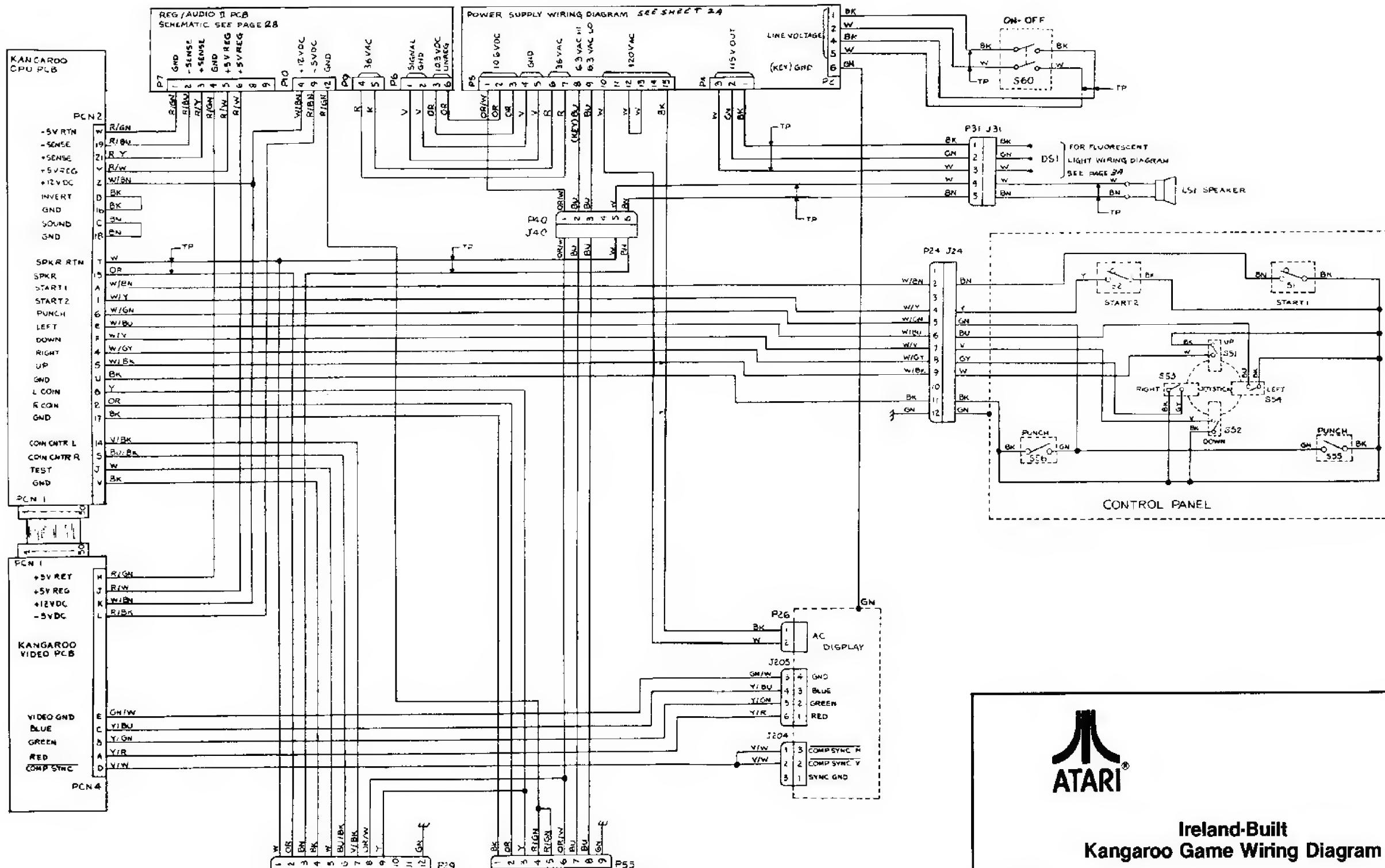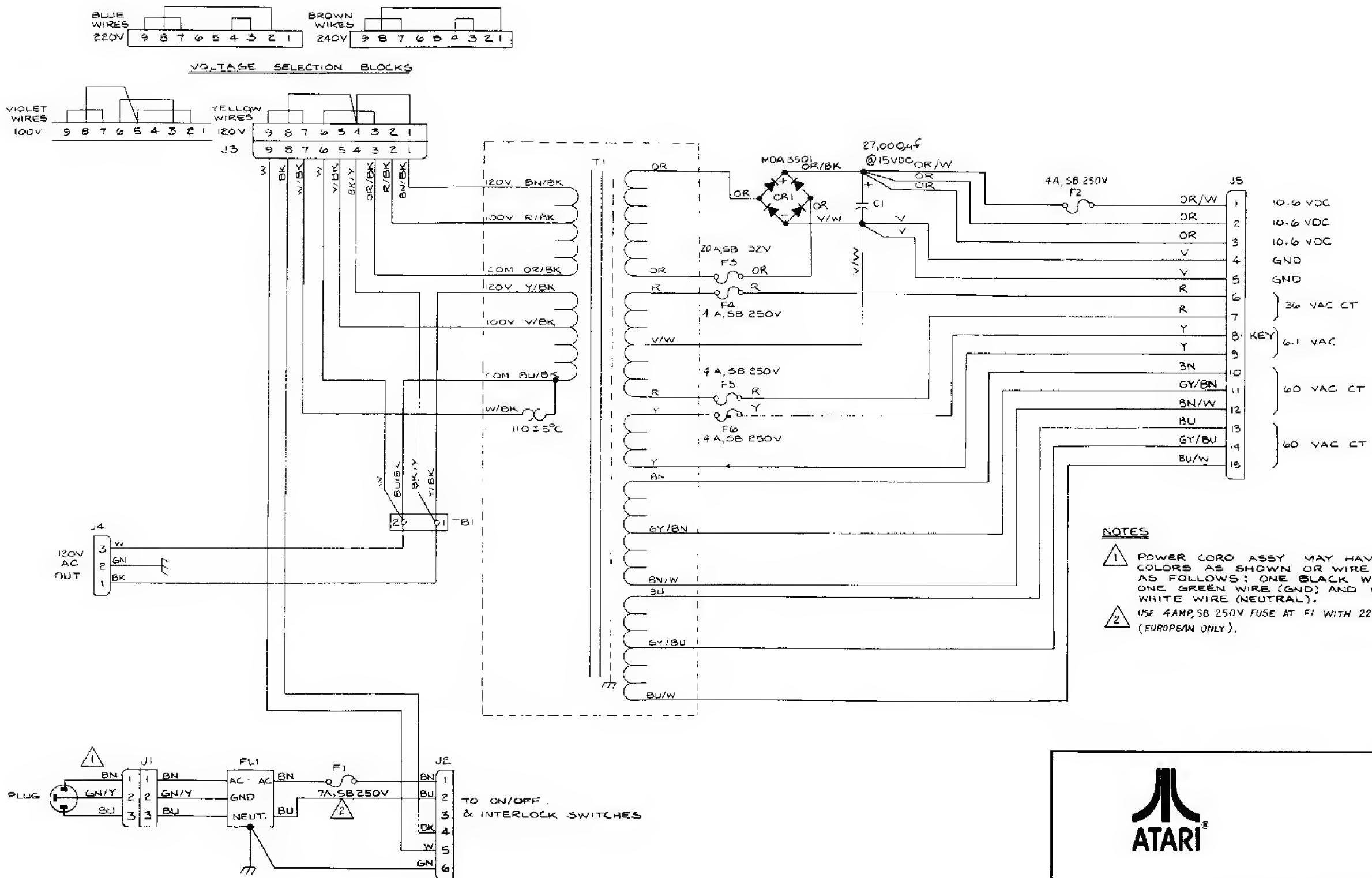
Kangaroo Power Supply

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NOTES

1. POWER CORD ASSY MAY HAVE WIRE COLORS AS SHOWN OR WIRE COLORS AS FOLLOWS: ONE BLACK WIRE (AC), ONE GREEN WIRE (GND) AND ONE WHITE WIRE (NEUTRAL).

2. USE 4AMP, SB 250V FUSE AT F1 WITH 220V & 240V (EUROPEAN ONLY).

Kangaroo Reg./Audio II PCB Schematic Diagram

TP, +10.3VDC UNREG
+10.5 VDC UNREG
J6 3 6 5

Q2 TIP32
R5 2.7, 1W
Q3 2N3055
R4 100
CR4 1N4002
R24 .1, 7W, WW
R3 33

Q1 LM305
C2 .001
R8, 1K
R7 7.5K
R6 3.9K
R1 270

TP, GND
SIG. GRD 1 2 4
C13 1000
C8 .22

R29 10
CR1 1N4002
C1 470
R30 10

J7 5 6 +5V REG
+SENSE
3 +SENSE
-SENSE
2 -SENSE
1 4 +5V RTN

J9 4 36VAC
TP
C21 .1
36VAC 5
C20 .1
GND 1 2

R32 3.6K
C18 3300, 35V
1N5401 × 4PL
CR5 + CR6 -
CR7 CR8
C19 3300 35V
R33 5.6K
R31 22 10W

R25 4Ω 5W
Q8 7812
TP
C22 1, 50V
C23 1, 50V
J10 4 +12VDC
1 2 +22VDC
3 6 -22VDC

C31 22 35V
Q9 7905
C24 22 35V
TP
9 -5VDC

5 8 11 12 GND

LAST DES	NOT USED
C31	C3-7, 9-12, 14-17, 25-30
CR8	CR2, 3
Q11	Q10, 11, 4, 6
R33	R2, 9-23, 26-28

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Coin Door Wiring Diagram

SW. GND	1	BK
RIGHT COIN SW.	2	OR
LEFT COIN SW.	3	Y
RIGHT LOCKOUT COIL	4	V
LEFT LOCKOUT COIL	5	R
+10 VDC	6	W
6.3 VAC	7	BU
6.3 VAC	8	GN
CHASSIS GND	9	GN

OR N.O. — N.C. — C. BK
RIGHT COIN SW.

Y N.O. — N.C. — C. BK
LEFT COIN SW.

DIODE IN 4001 (2 PLCS)

RIGHT LOCKOUT COIL
LEFT LOCKOUT COIL

LAMPS
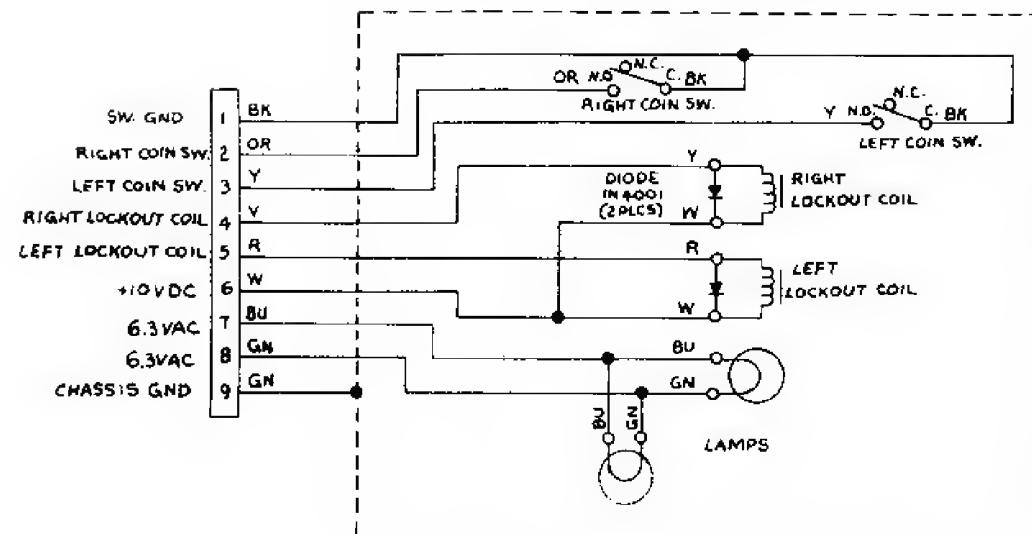
Utility Panel Wiring Diagram

W
BN
OR
R1 VOLUME CONTROL

J29		
	1	W
	2	OR
	3	BN
	4	BK
	5	W/BK
	6	BU
	7	V
	8	OR/W
	9	Y
	10	
	11	
	12	GN

BK
W/BK
S11 TEST SW

Y — BK
S4 COIN SW

DIODE IN 4001 (2 PLCS)

P35A 1 2 3
RIGHT COIN COUNTER

P35B 1 2 3
LEFT COIN COUNTER
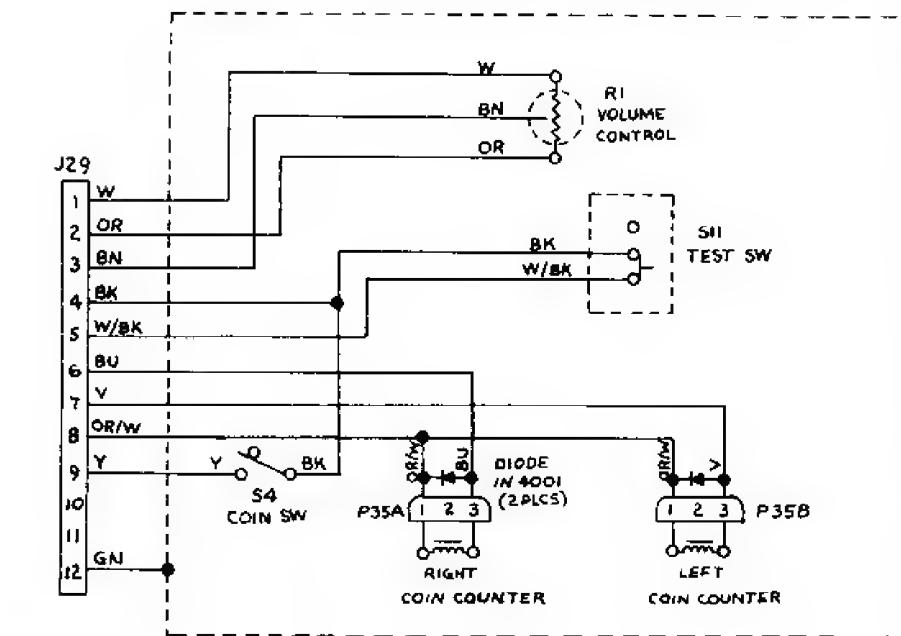
Fluorescent Light and Speaker Wiring Diagram
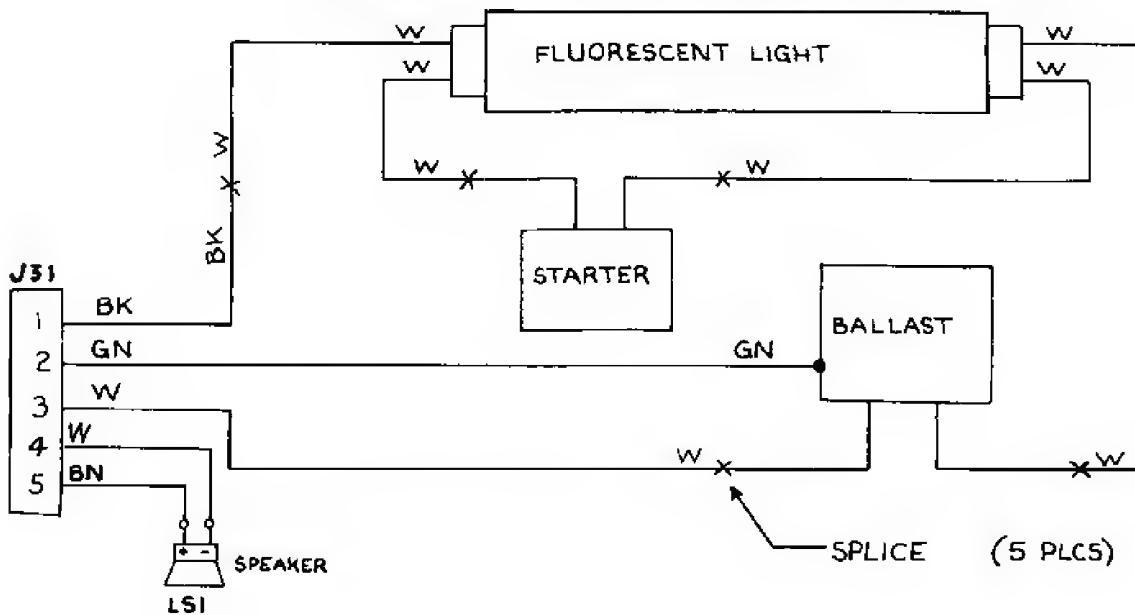
W
W
FLUORESCENT LIGHT
W
W

W
W

STARTER

BALLAST

J31		
	1	BK
	2	GN
	3	W
	4	W
	5	BN

BK

GN

W
SPLICE   (5 PLCS)

SPEAKER
LS1

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Kangaroo Game Wiring Interfaces

Block Diagram (CPU PCB)

Z80 Game Microprocessor — 5A

Address Decoder — 5A

PCB Interconnector → To Video PCB

RAM — 5B

Program ROM — 5B

I/O — 6A

Z80 Sound Microprocessor — 6B

Custom Microcomputer — 7A

Sound RAM — 6B

Sound ROM — 6B

Sound Generator and Audio Amp — 6B

To Volume Control and Speaker
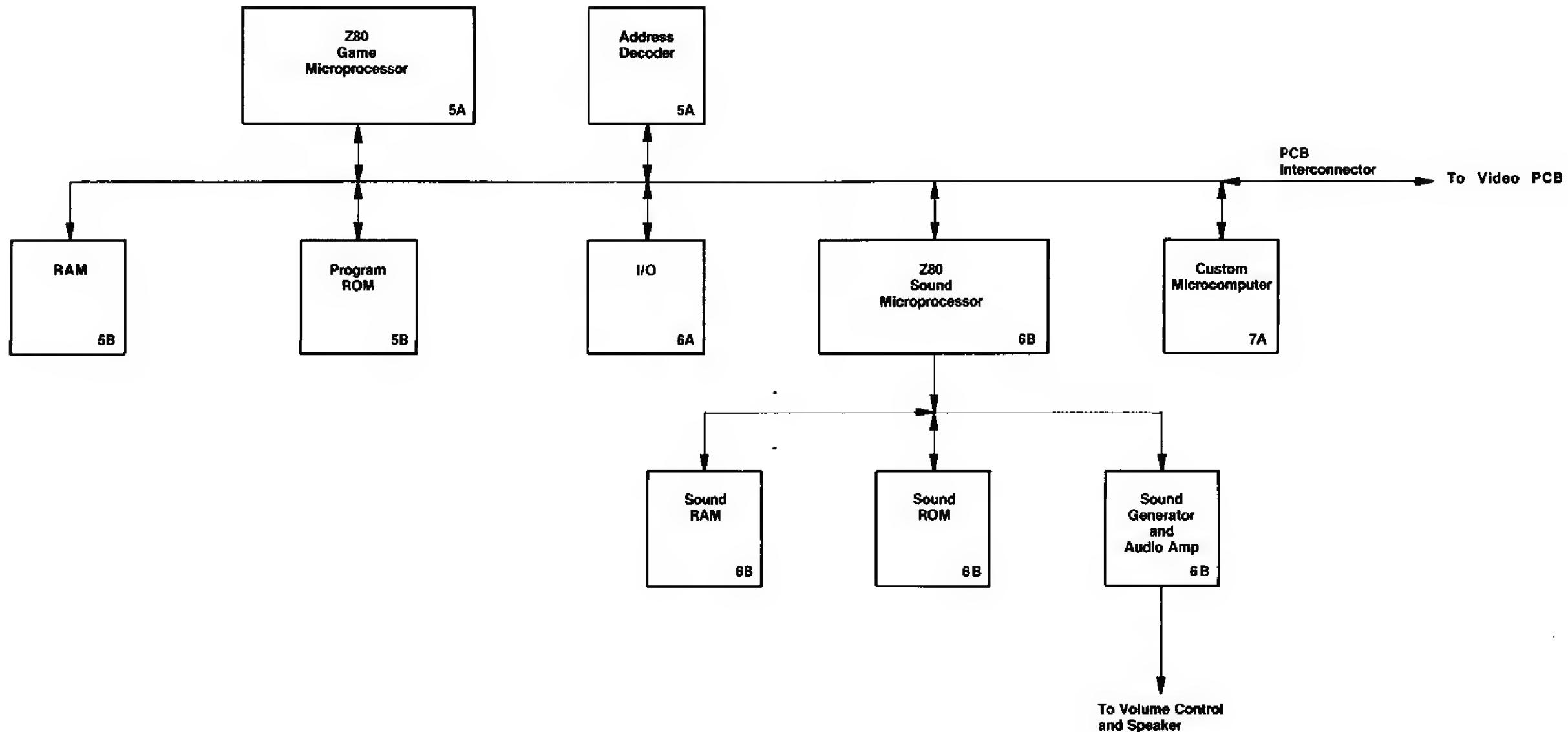
Memory Map

HEXA-DECIMAL ADDRESS	R/W	DATA D7	D6	D5	D4	D3	D2	D1	D0	FUNCTION
Game Microprocessor Memory Space (IC15)										
0000-5FFF	R	D	D	D	D	D	D	D	D	Z80 24K Program ROM
E000-E3FF	R/W	D	D	D	D	D	D	D	D	1K Working RAM
E400	R	D	D	D	D	D	D	D	D	Option Switch
E800	W	D	D	D	D	D	D	D	D	Low Byte ⌉ Start Address of Data in Picture
E801	W	D	D	D	D	D	D	D	D	High Byte ⌋ ROM for DMA
E802	W	D	D	D	D	D	D	D	D	Low Byte ⌉ Start Address in Bit Map RAM (where
E803	W	D	D	D	D	D	D	D	D	High Byte ⌋ picture is to be written) During DMA
E804	W	D	D	D	D	D	D	D	D	Low Byte ⌉ Picture Size for DMA
E805	W	D	D	D	D	D	D	D	D	High Byte ⌋ and DMA Start
E806	W	D	D	D	D	D	D	D	D	Vertical Start Address in Bit Map
E807	W	D	D	D	D	D	D	D	D	Horizontal Start Address in Bit Map
E808	W								D	Bank Select Latch
E809	W			D	D	D	D	D	D	A & B Bit Map Control Latch (A = playfield, B = motion)
E80A				D	D	D	D	D	D	Color-Shading Latch
EC00	W	D	D	D	D	D	D	D	D	Sound DATA to Sound Microprocessor
EC00	R								D	Utility Coin Switch
EC00	R							D		1 Player Start
EC00	R						D			2 Player Start
EC00	R					D				Left Coin Input
EC00	R				D					Right Coin Input
ED00	W								D	Coin Counter 1
ED00	W							D		Coin Counter 2 (European games)
ED00	R								D	Player 1 Right
ED00	R							D		Player 1 Left
ED00	R						D			Player 1 Up
ED00	R					D				Player 1 Down
ED00	R				D					Player 1 Punch
EE00	R								D	Player 2 Right
EE00	R							D		Player 2 Left
EE00	R						D			Player 2 Up
EE00	R					D				Player 2 Down
EE00	R				D					Player 2 Punch
EFXX	W					D	D	D	D	Output to Custom Microcomputer
EFXX	R					D	D	D	D	Input from Custom Microcomputer
Sound Microprocessor Memory Space (IC34)										
0000-0FFF	R	D	D	D	D	D	D	D	D	4K Program ROM
4000-43FF	R/W	D	D	D	D	D	D	D	D	1K Working RAM
6000	R	D	D	D	D	D	D	D	D	Read DATA from Game Microprocessor
7000	W	D	D	D	D	D	D	D	D	Write to Sound Chip (GI-AY-3-8910)
8000	R	D	D	D	D	D	D	D	D	Read from Sound Chip

CPU Power Input
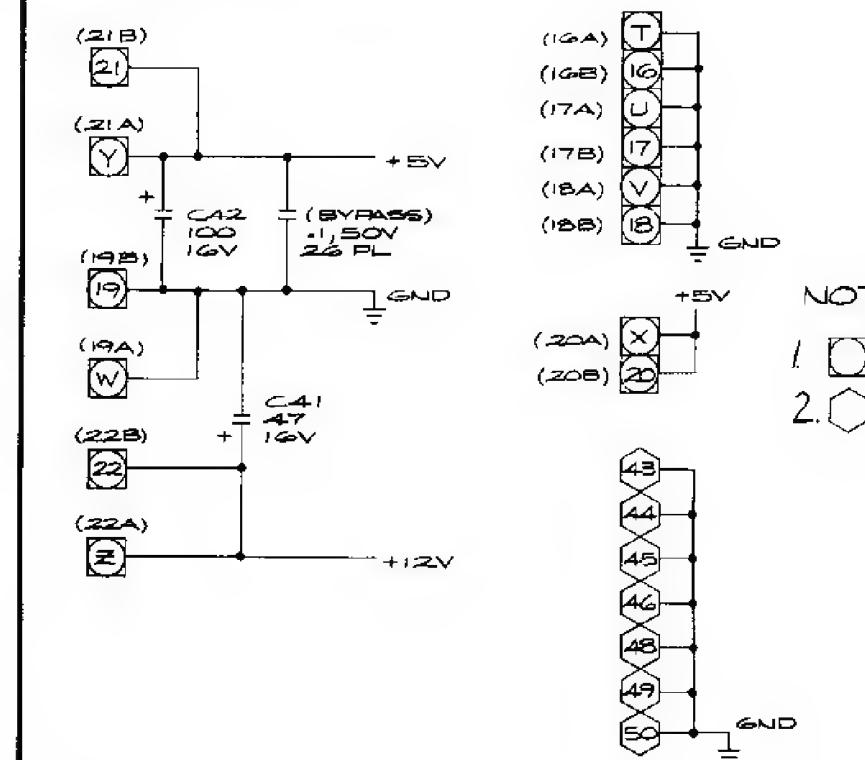
NOTES:

1. ⬡ = CONNECTOR CN2

2. ⬡ = CONNECTOR CN1

Game Microprocessor
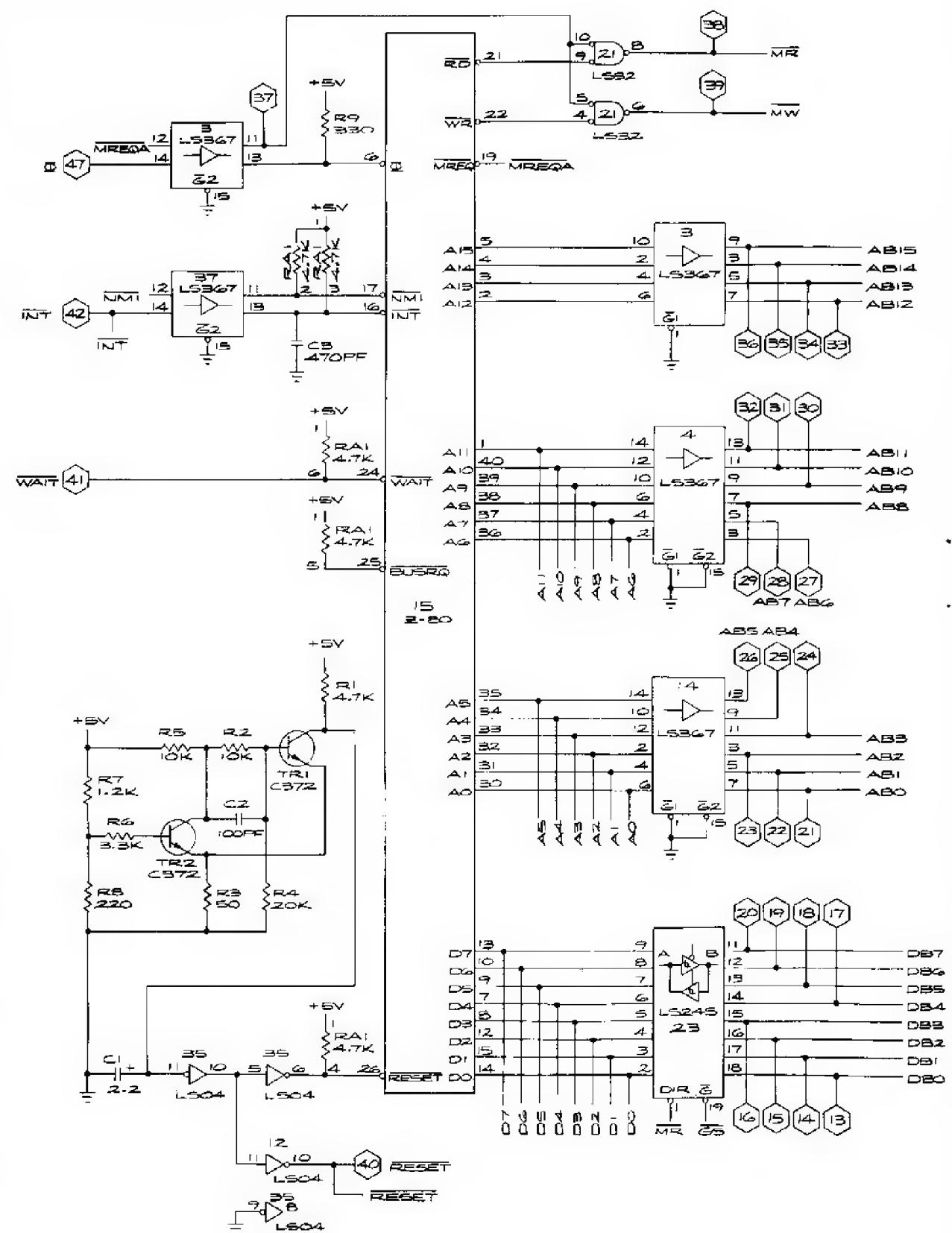
Address Decoder
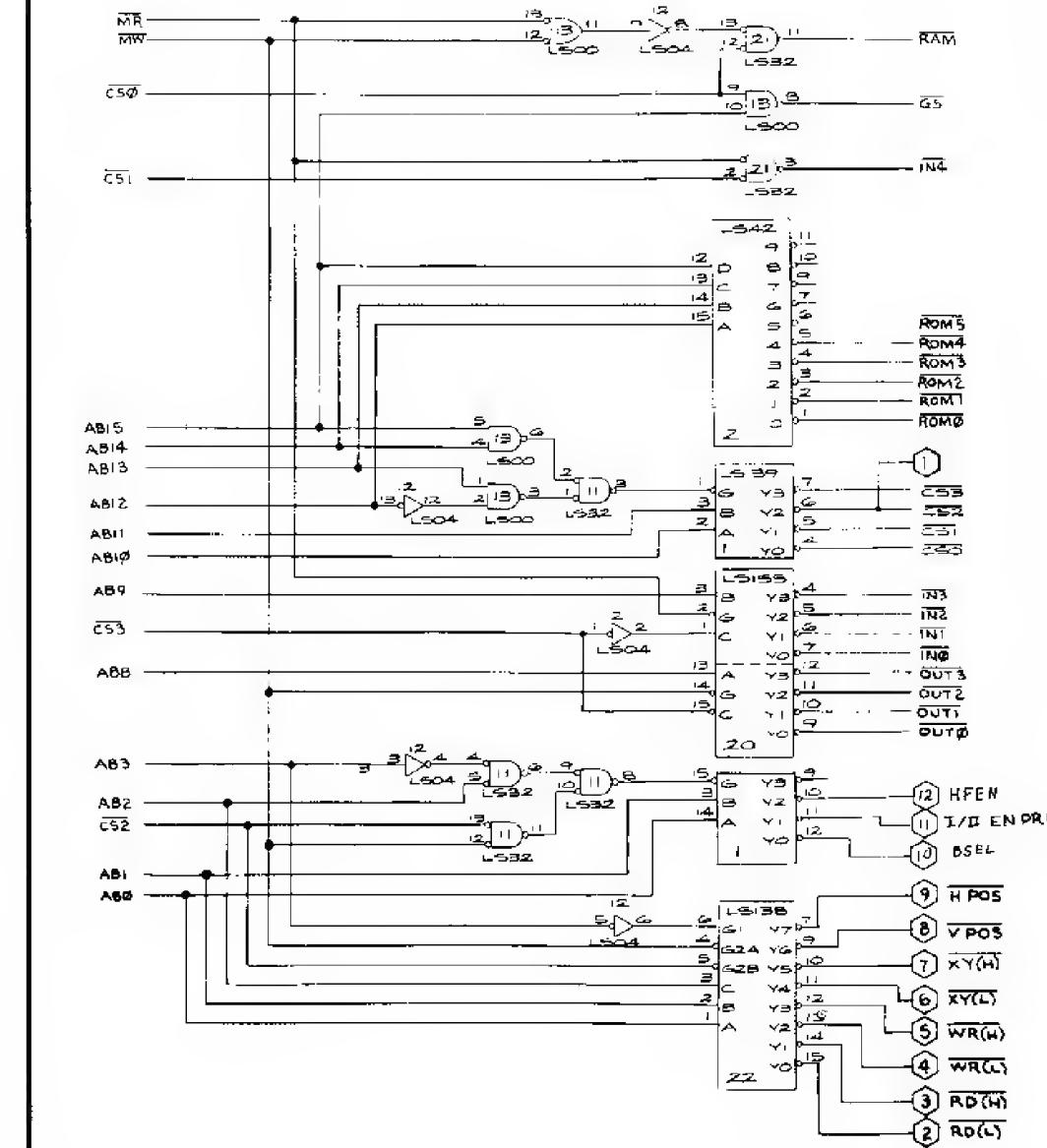
Kangaroo CPU PCB Schematic Diagram

Program ROM
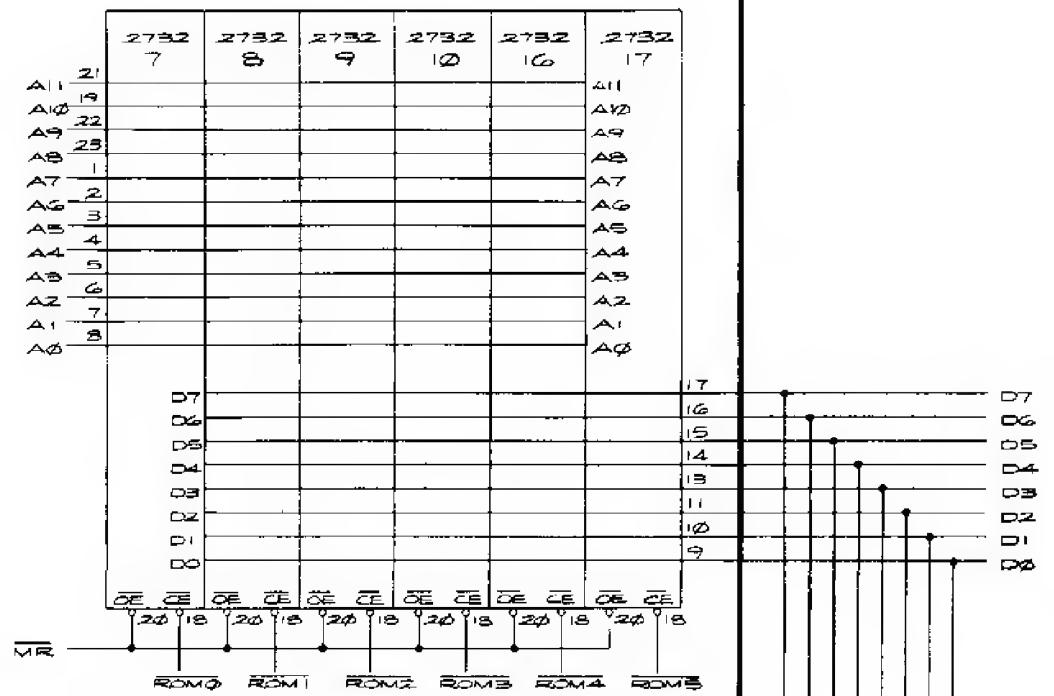
RAM
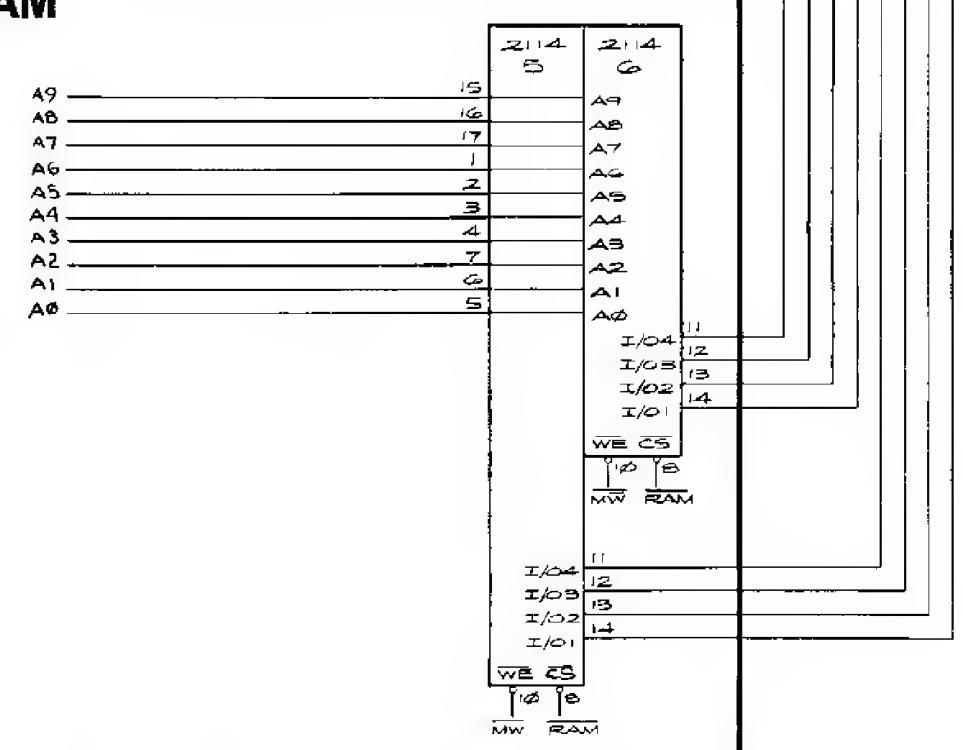
Inputs
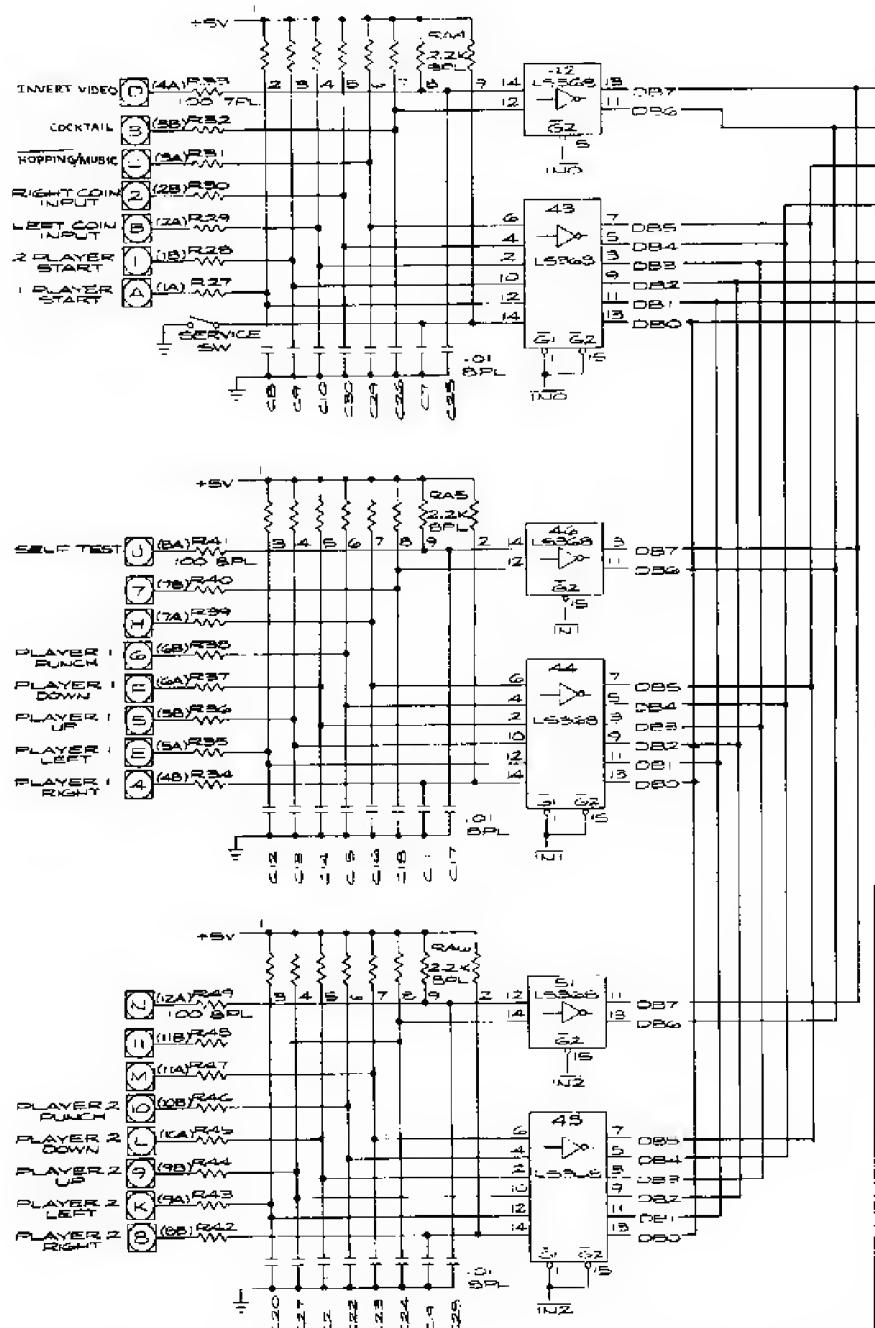
Outputs
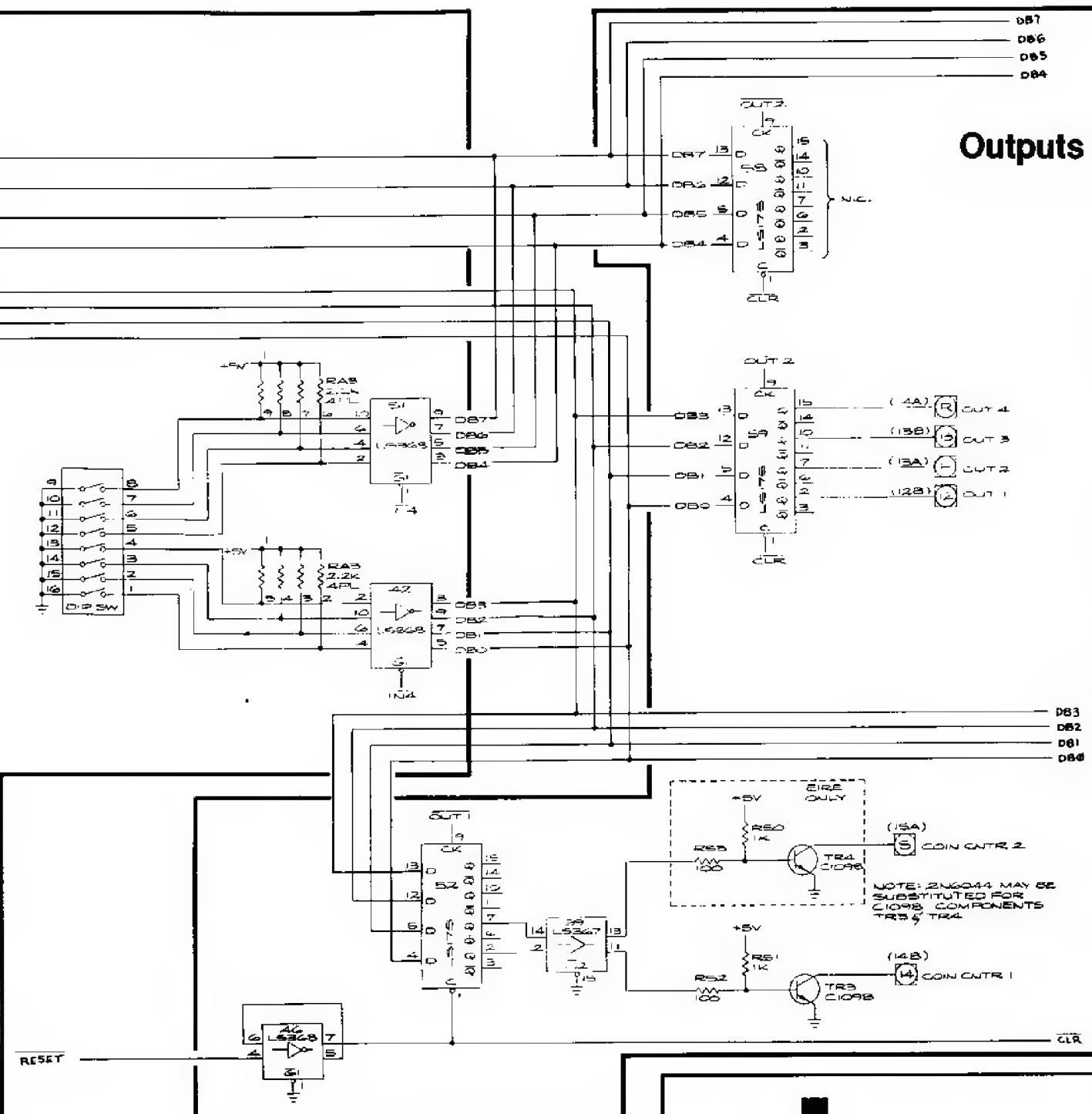
Kangaroo CPU PCB Schematic Diagram

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Sound Microprocessor

## Address Decoder

Custom Microcomputer
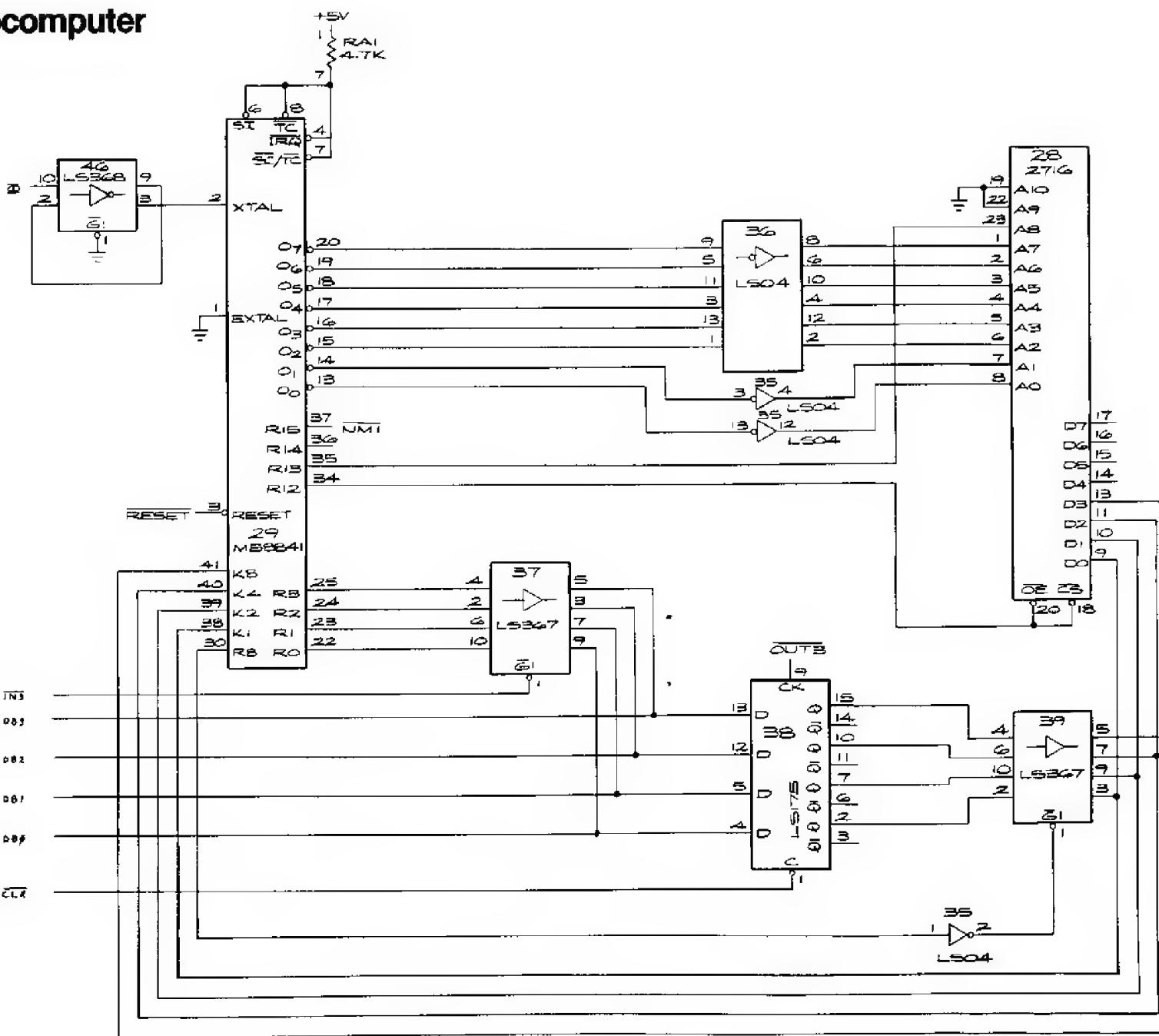
Kangaroo CPU PCB Schematic Diagram

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2nd printing

Block Diagram (Video PCB)

Clock
Sync Chain
and
Timing Signals

8B

8B

Dynamic RAM
Control
and
Address

8B

Dynamic RAM
Address
Multiplexers

10A & 10B

Dynamic RAM
(Playfield)

ADDR

Dout

DATA

11A

Video Out

11B

To Display

PCB
Interconnector

To CPU PCB

DMA
Control

9A

Dynamic RAM
Data
Multiplexers

10B

Dynamic RAM
(Motion Objects)

DATA

Dout

ADDR

11B

Picture ROM
Address
Selector

9B

Picture
ROM

9B

Kangaroo Video PCB Schematic Diagram

Dynamic RAM Timing Diagram (Video PCB)
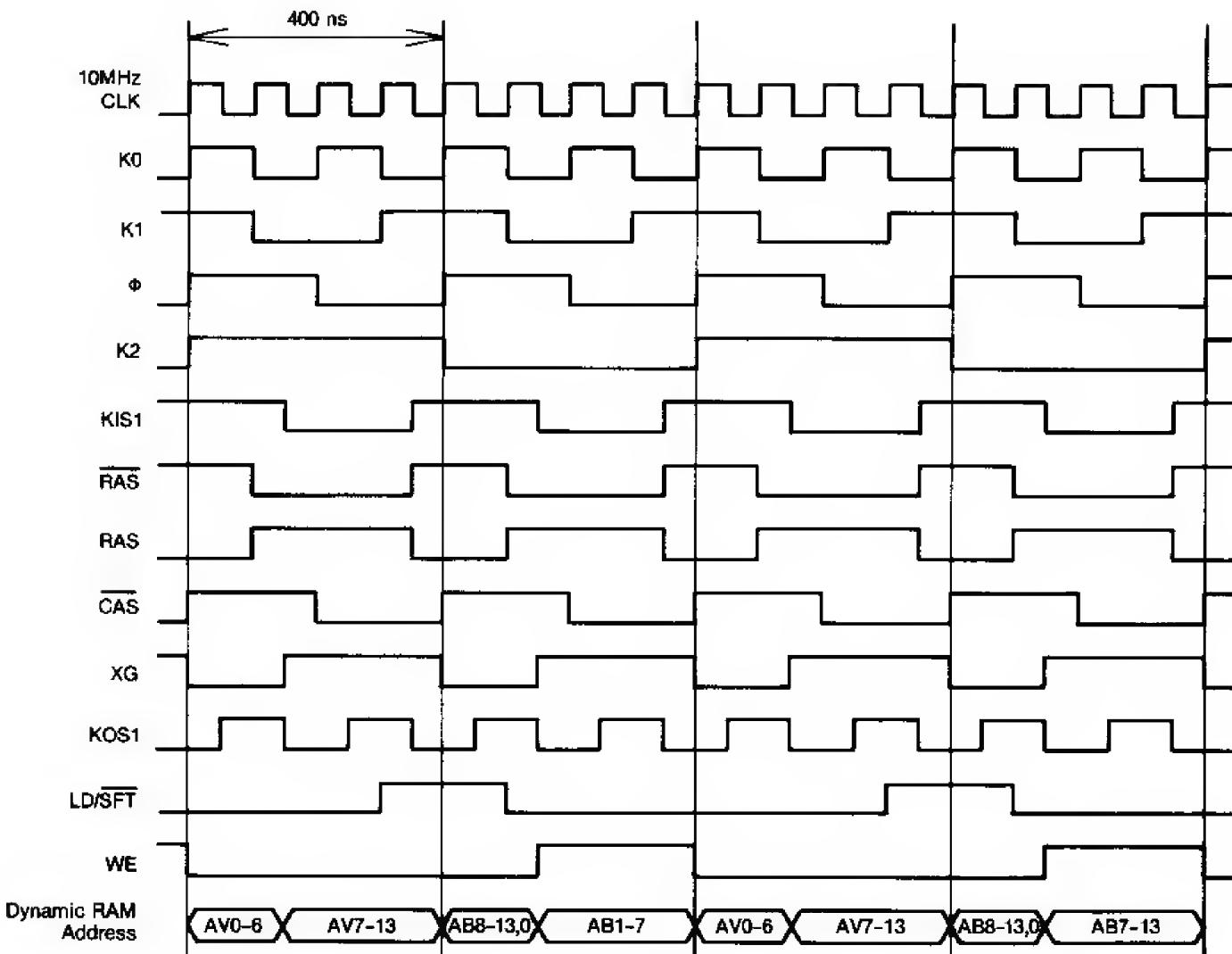
Video Power Input
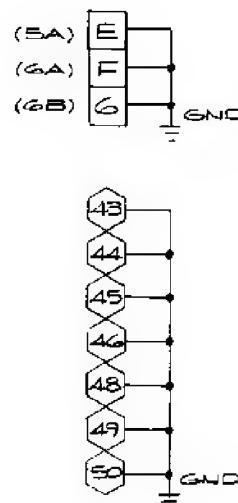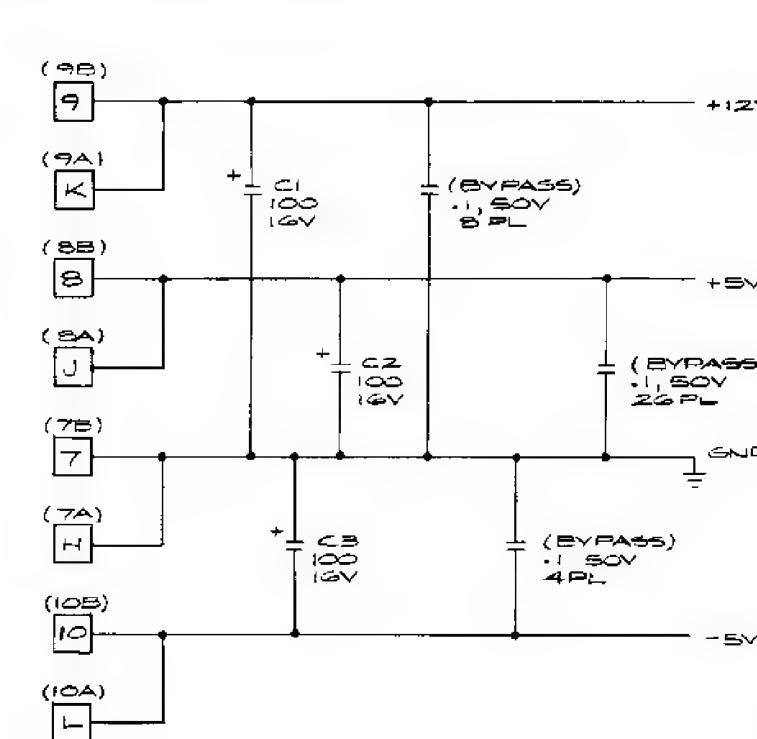
NOTES:

1. ⬡ = CONNECTOR CN1
2. ▢ = CONNECTOR CN4

Kangaroo Video PCB Schematic Diagram

Clock, Sync Chain, and Timing Signals
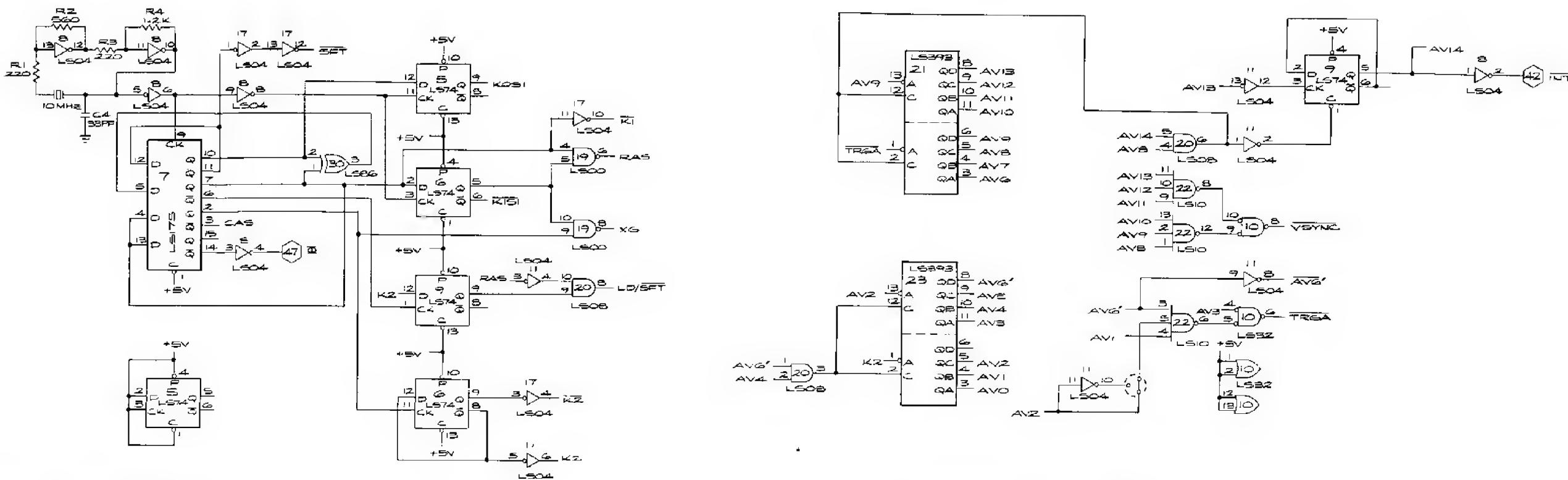

Dynamic RAM Control
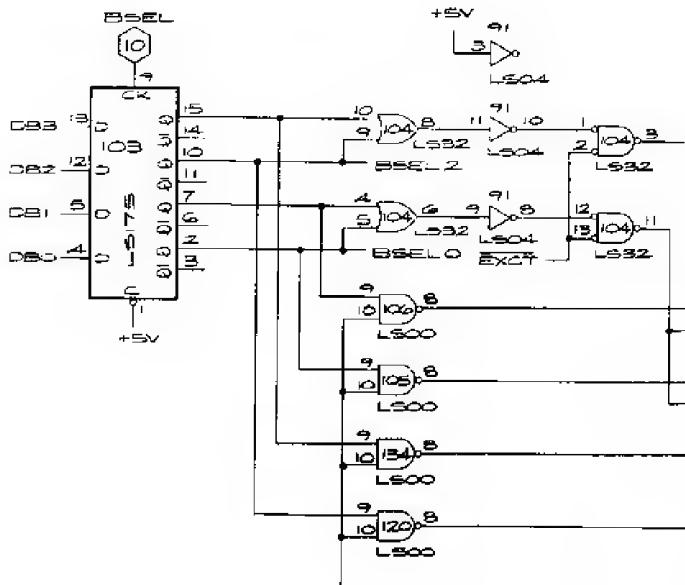
Address Decoding
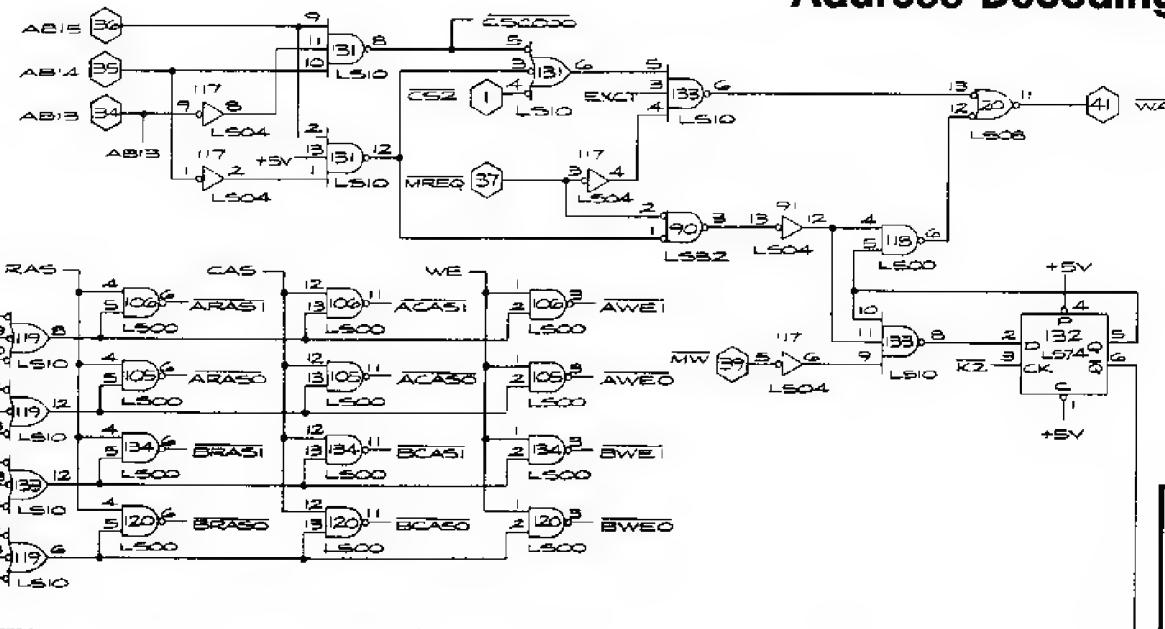
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Kangaroo Video PCB Schematic Diagram

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DMA Control
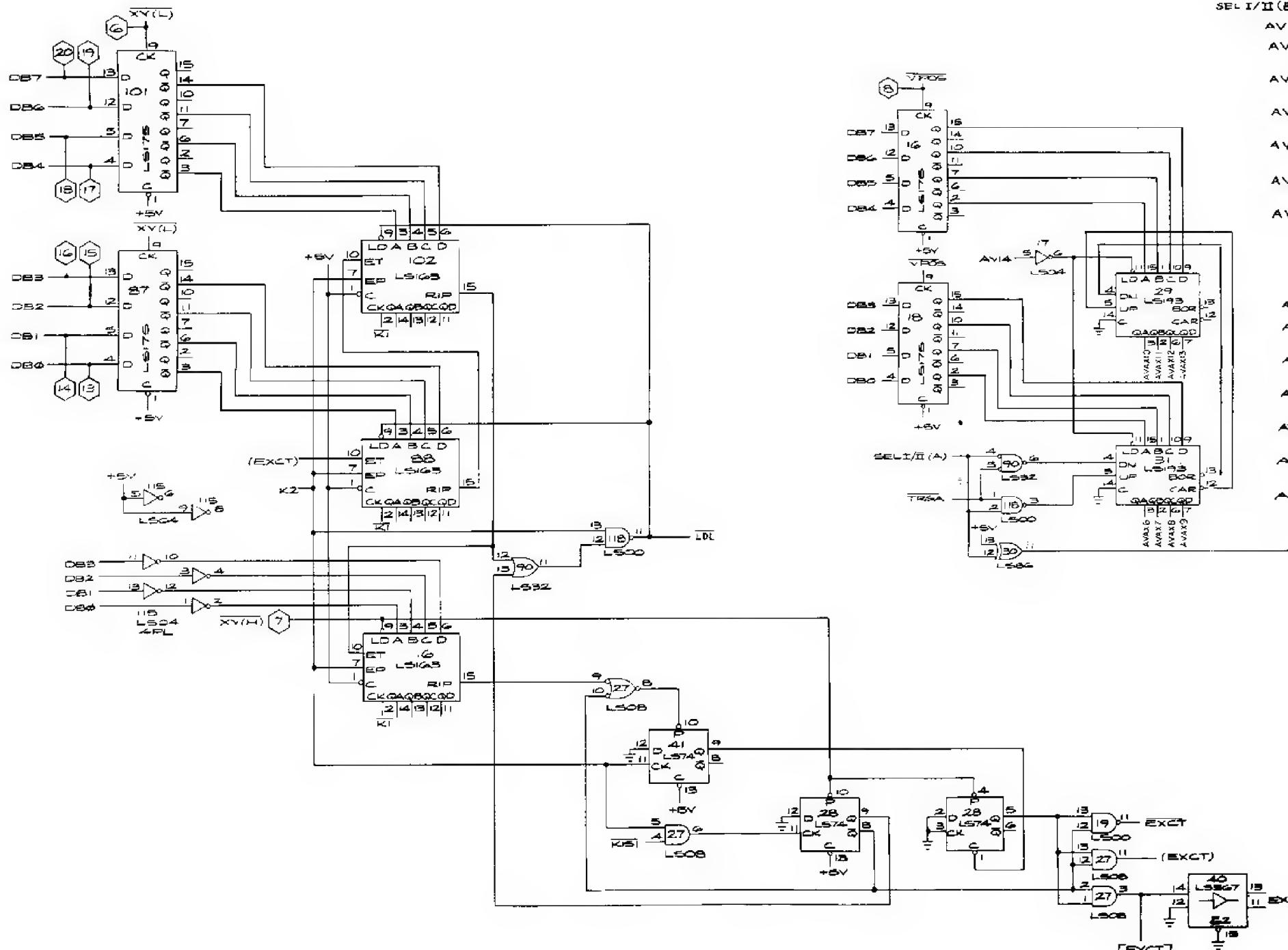
Dynamic RAM Video Address and Flip
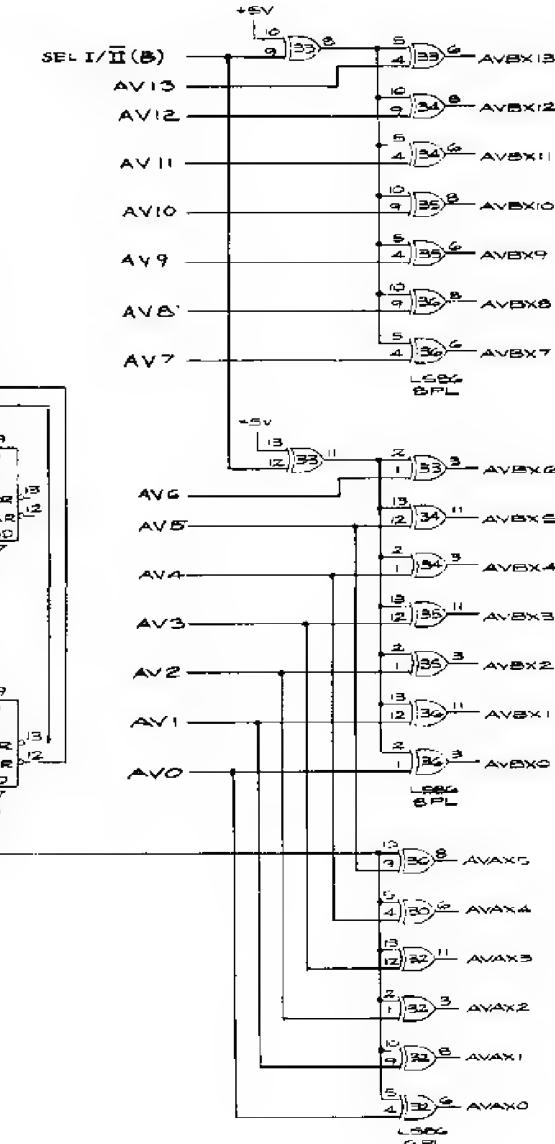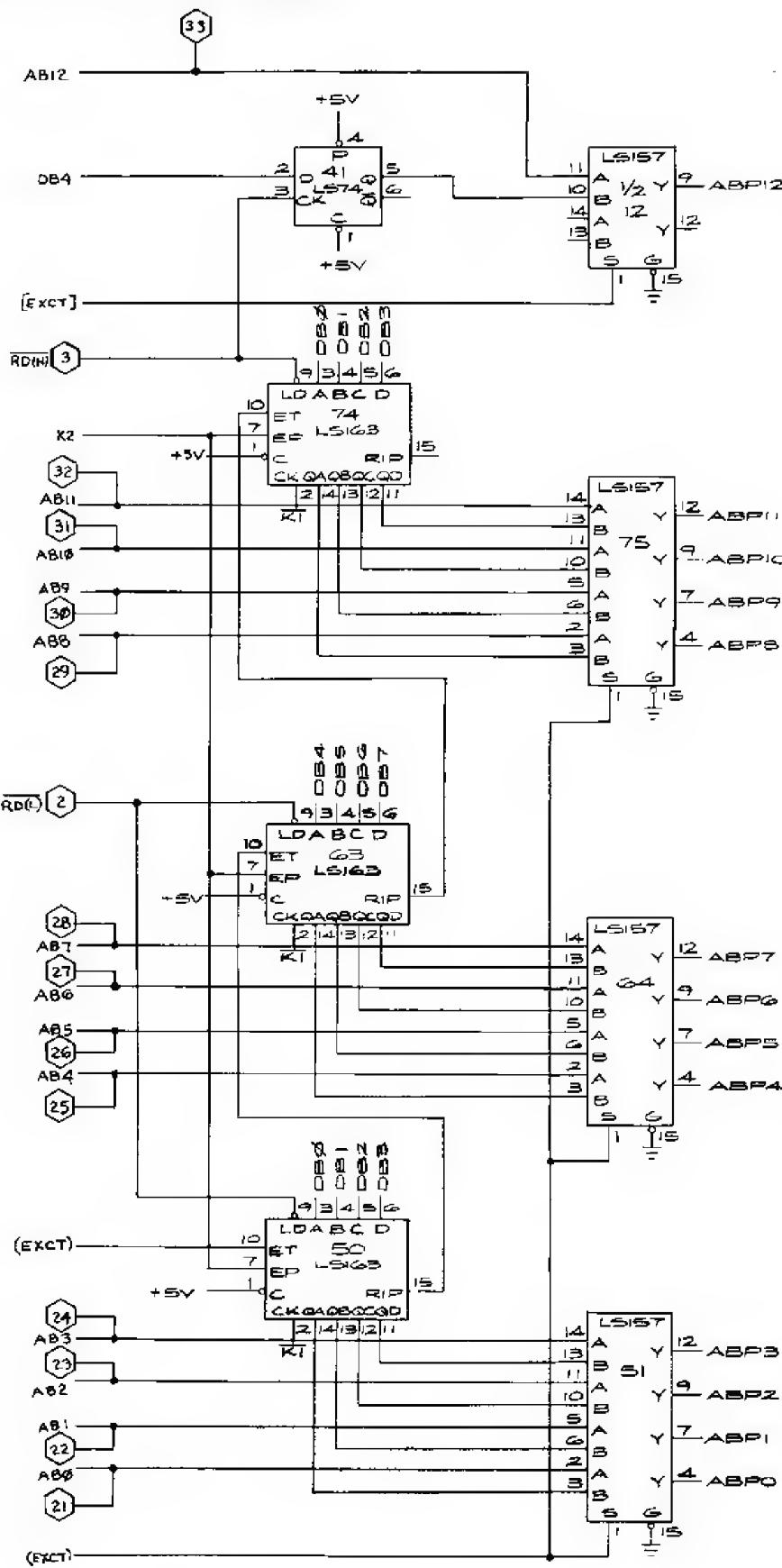
Picture ROM Address Selector

Picture ROM
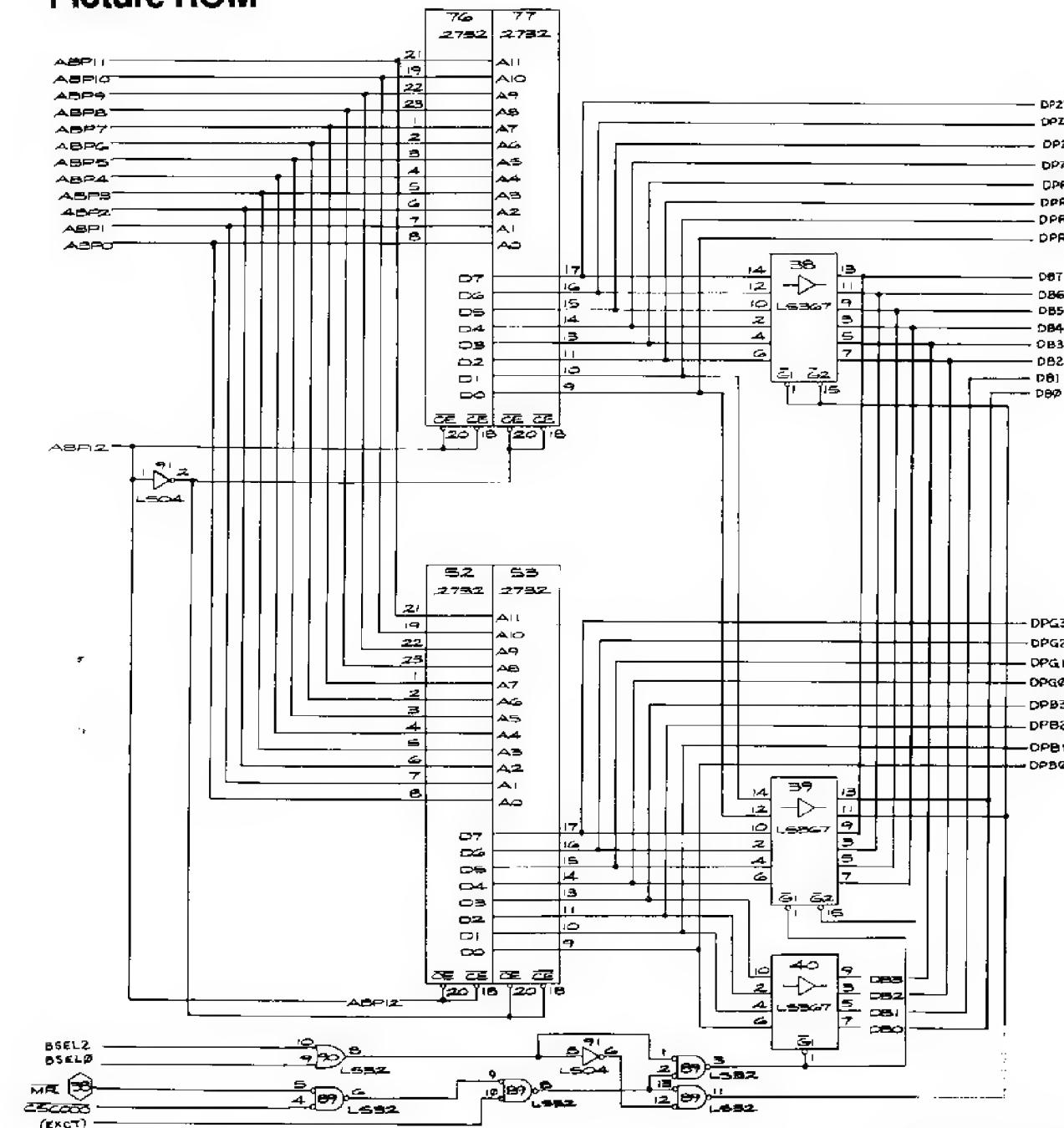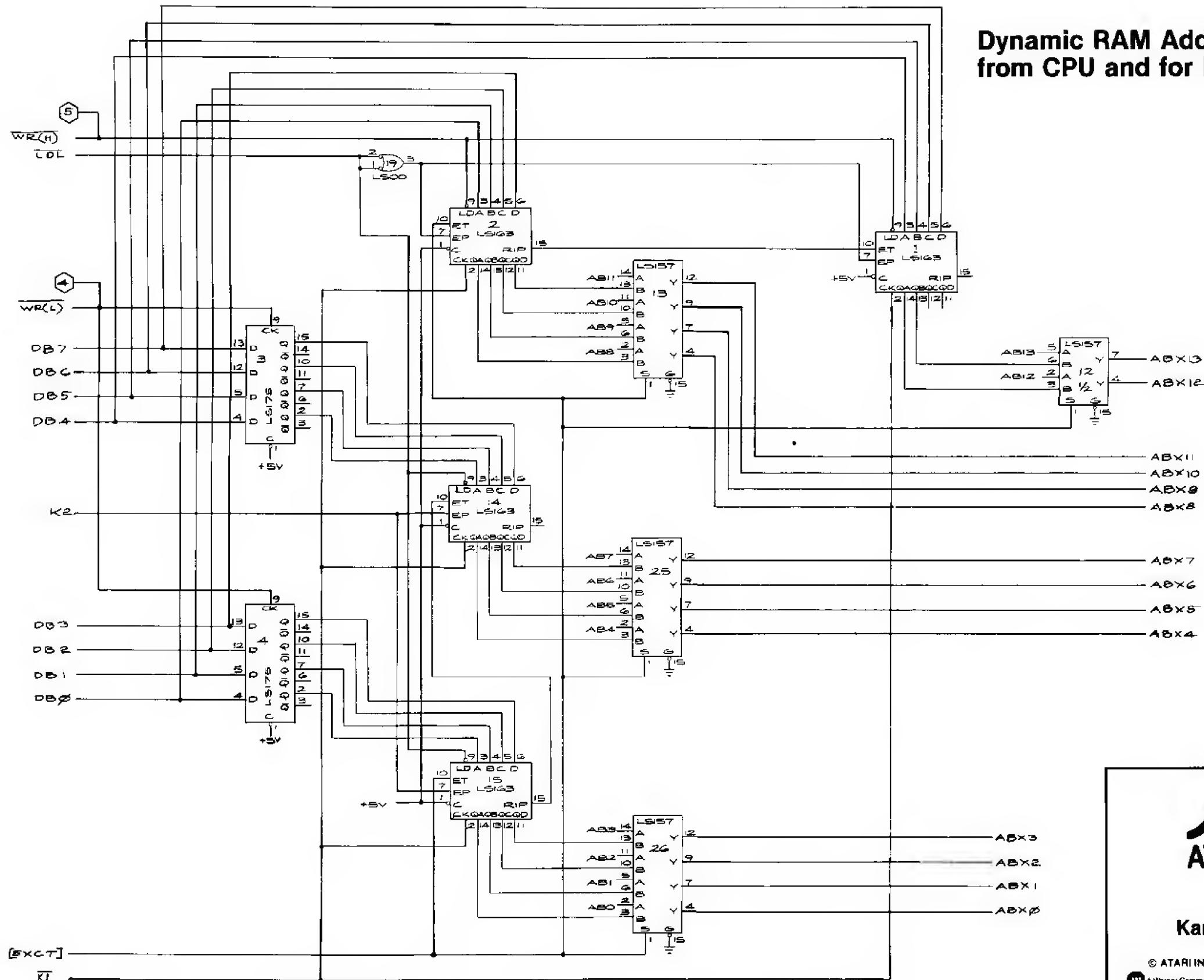
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## Kangaroo Video PCB Schematic Diagram

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Dynamic RAM Address from CPU and for DMA

Dynamic RAM Data Selector

Dynamic RAM Address Selector
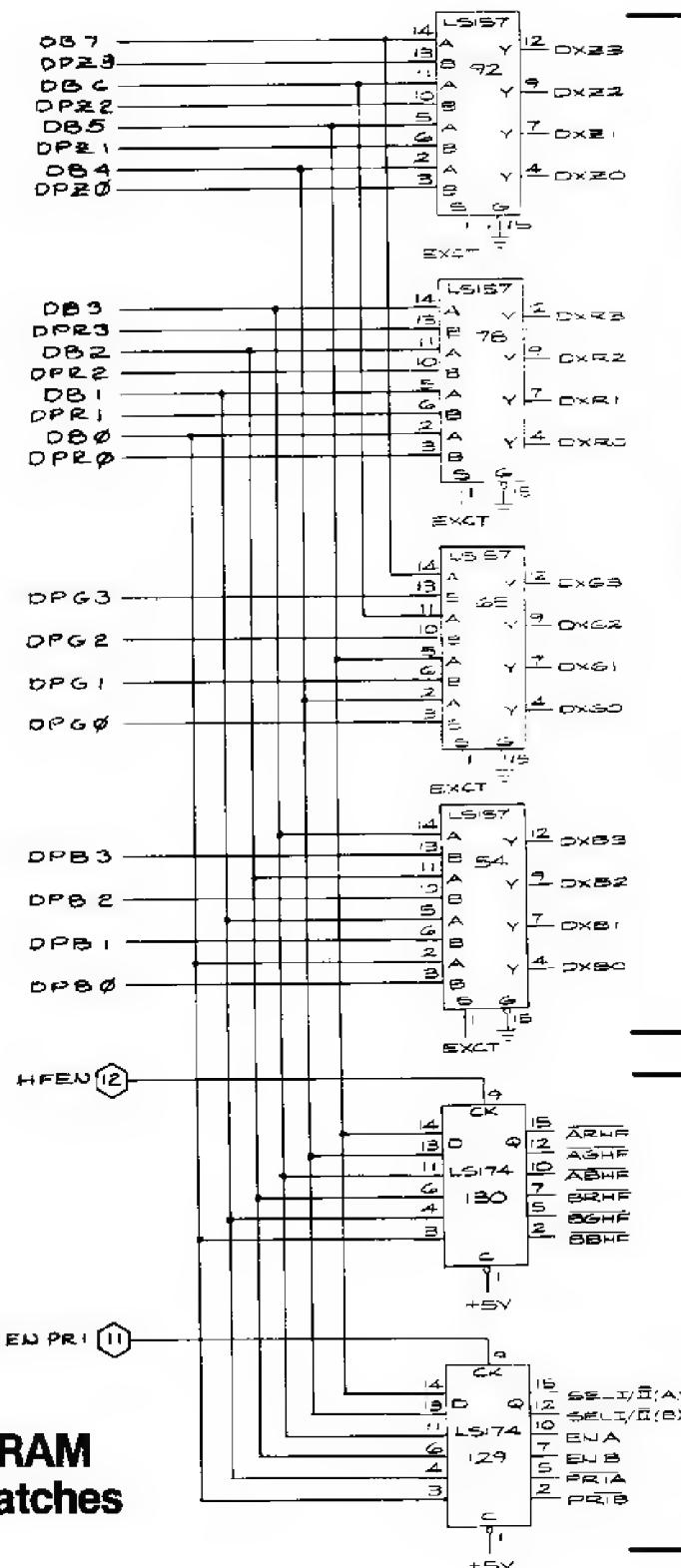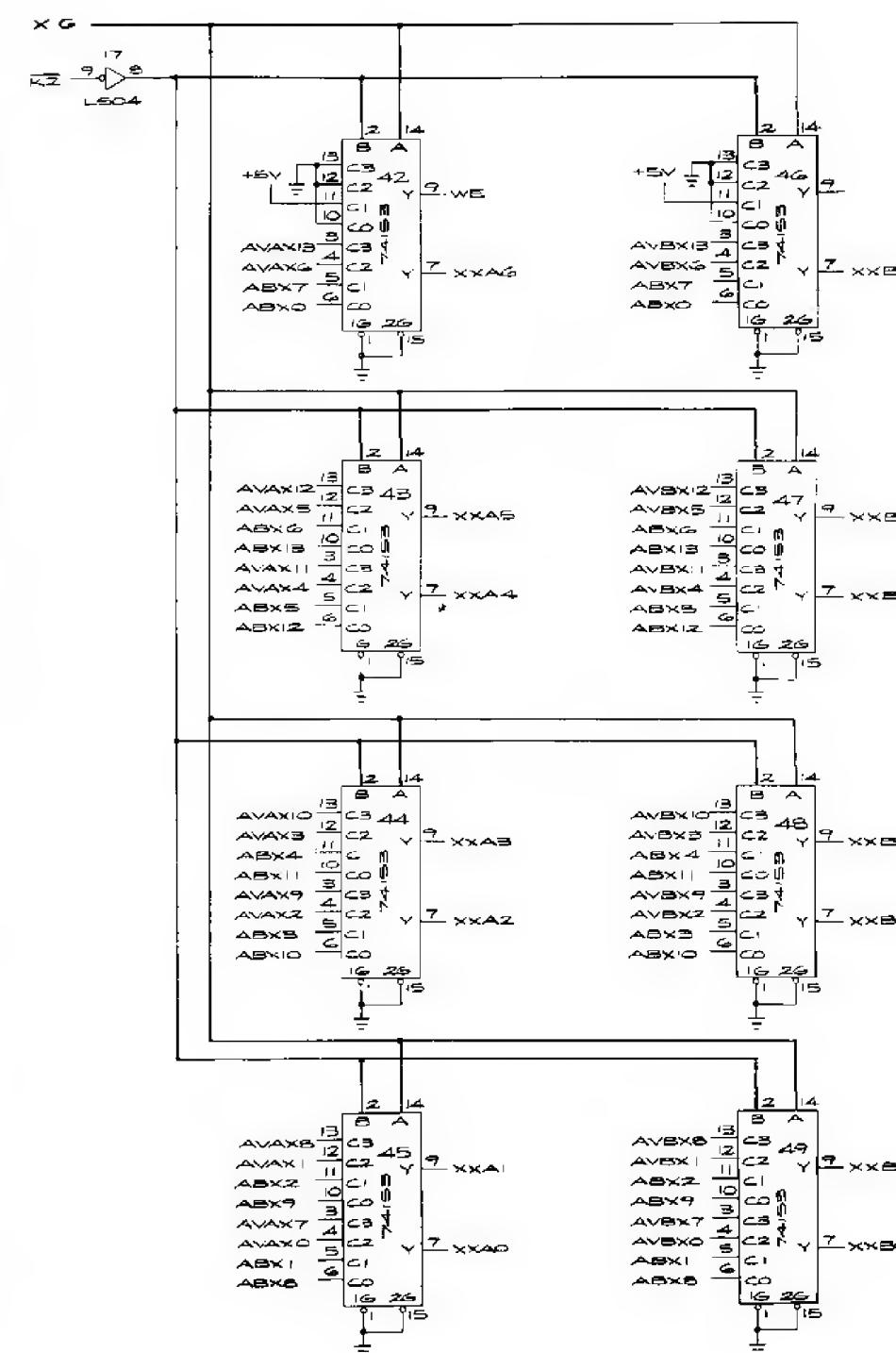
Dynamic RAM Control Latches

**Playfield
(Dynamic RAM A)**

Kangaroo Video PCB Schematic Diagram

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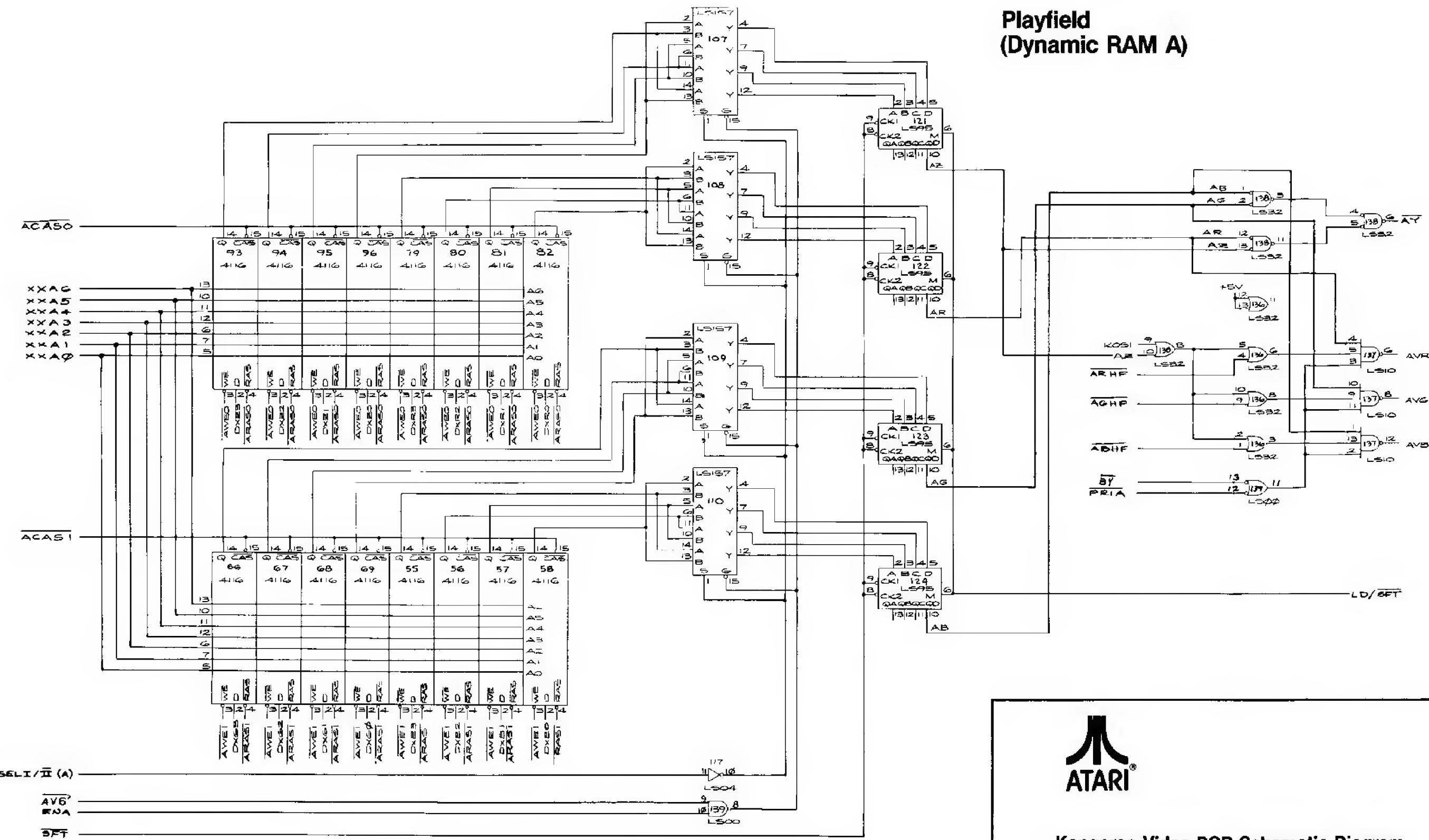
Motion Object
(Dynamic RAM B)
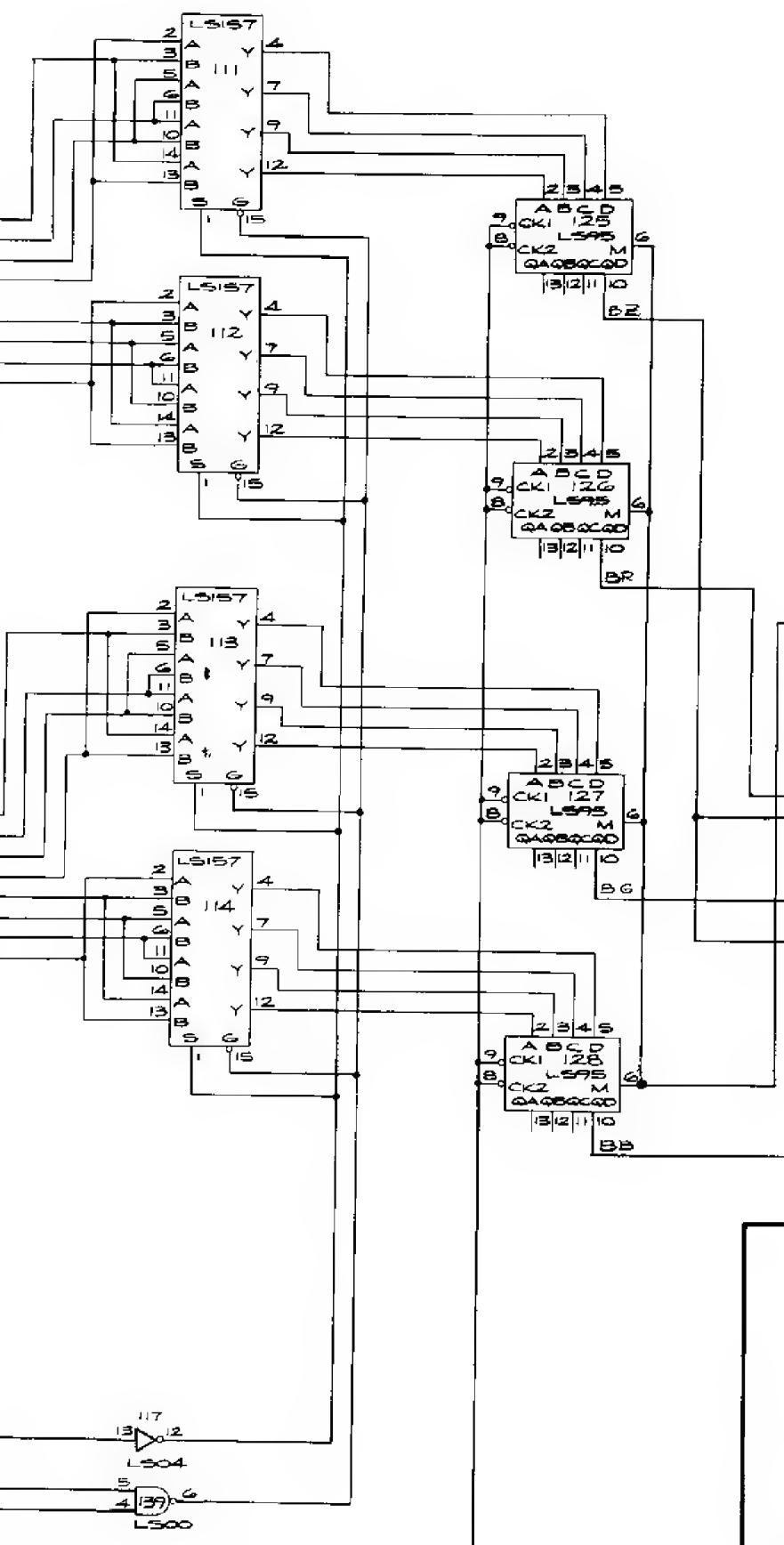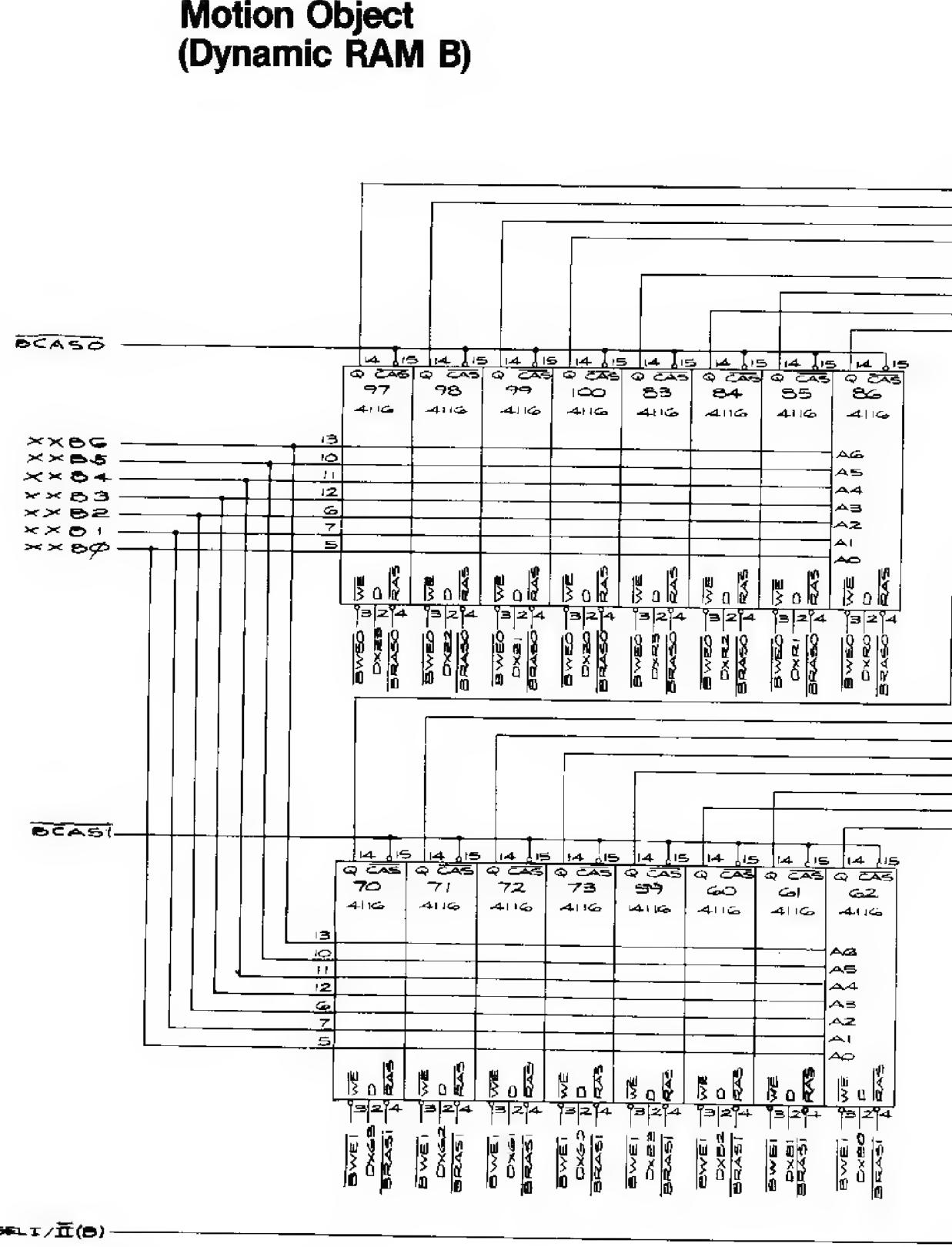
Video Output
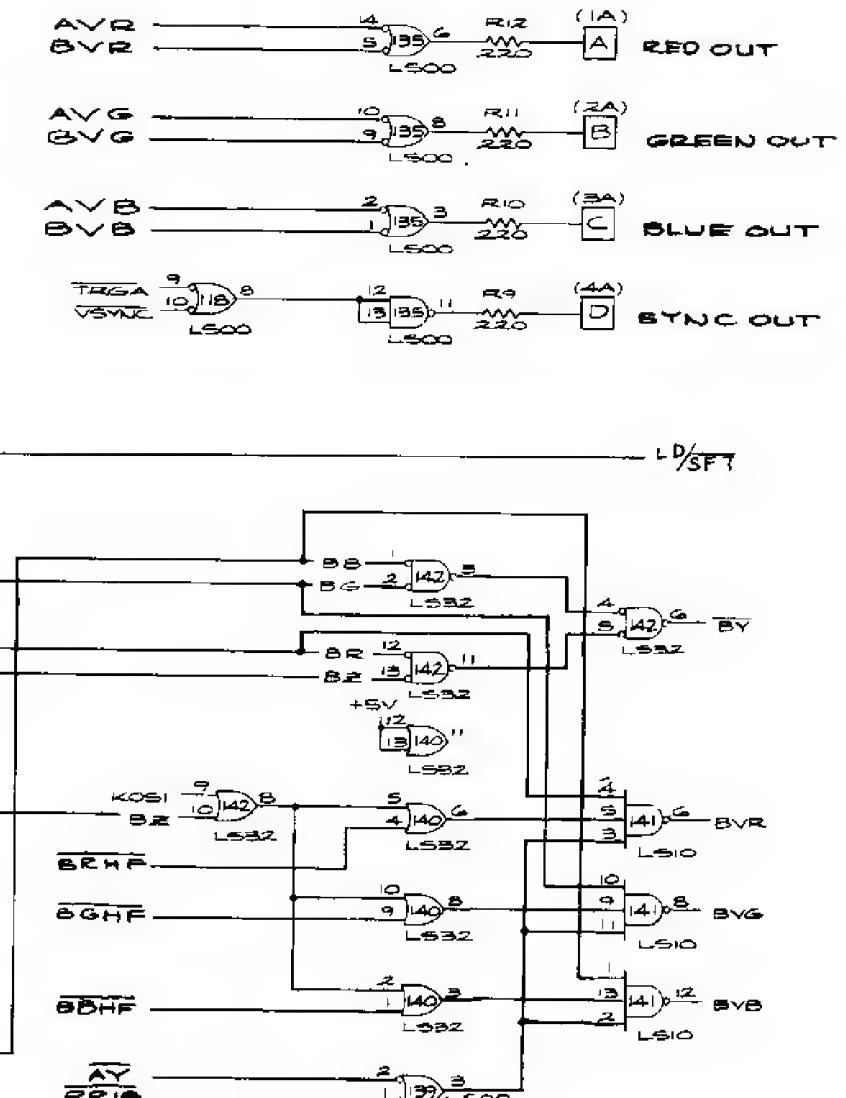
Kangaroo Video PCB Schematic Diagram

Electrohome 19-Inch Color Raster-Scan Video Display Schematic Diagram

SU-1133A MAIN PCB ASSY

SU-3032A CRT SOCKET PCB ASSY

X701 X-RAY PROTECTOR 2SC454C or 2SC1685

X501 H.DRIVE 2SC1507 or 2SC2371V 2SC2611 or 2SC2610BK

X01 H OUT 2SD89B or 2SD869 or 2SD820

AC120V 60Hz/50Hz ±10%